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## The governance of coal ash pollution in post-socialist times: power and expectations

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# The governance of coal ash pollution in post-socialist times: power and expectations

## Abstract

The coal energy sector in Bosnia and Herzegovina (BiH) represents both a significant economic hope and a considerable environmental threat for the country. One of the major problems of the coal industry is the disposal of large amounts of coal combustion residues. RECOAL was an EU-supported project (2005-2007) whose objective was to develop remediation solutions for coal ash disposal (CAD) sites in BiH. Most of RECOAL's environmental fieldwork was based around TEP in the municipality of Tuzla, one of the biggest –thermo-electric power plants in the country. Qualitative research was carried out to understand the environmental governance structure of the area and inform and test the acceptance of different remediation solutions proposed by RECOAL. Interviews with institutional stakeholders showed a highly complex institutional structure, where government institutions and industry are involved in complicated negotiations about the distribution of the liabilities resulting from TEP's pollution. Interviews among local residents show that locally organised action could help steer the policy-making process towards more sustainable solutions.

Keywords: coal ash pollution, Central and Eastern European Countries, environmental governance, institutional change

## Introduction

The energy sector in Bosnia and Herzegovina (henceforth BiH) is regarded as the main engine for the economic development of the country. Electricity production not only meets domestic demands, but is also exported to neighbouring countries (Lekić 2008). However, difficulties such as inefficiencies in the energy generation and consumption technologies, and losses in transmission and distribution together with the negative environmental impacts of this coal-dependent industry cast a shadow on improving the country's sustainability and development.

Energy production is managed by three vertically integrated monopolies (Elektroprivreda of Bosnia and Herzegovina, Elektroprivreda of the Croatian Community Herzeg-Bosnia and Elektroprivreda of the Republika Srpska.), though new private actors are emerging in this sector following the EU guidelines for the liberalisation of the energy sector<sup>1</sup>. According to Elektroprivreda of Bosnia and Herzegovina, in 2006 76% of its energy production (4,812 Gwh) was produced in coal fired thermal power plants<sup>2</sup>. Given the important reserves of coal near Tuzla, and an estimated 4 billion tonnes in the whole country, the use of coal in power generation is likely to continue for quite some time (Ibreljic and Kulenovic 2005). The major issue regarding the production of energy from coal is the harmful environmental impact associated with this industry, including the impacts of coal mining, the emission of pollutants to the atmosphere during combustion, and the disposal of coal combustion residues, such as fly ash, bottom ash and boiler slag.

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<sup>1</sup> 2006/55/EC: Council Decision of 30 January 2006 on the principles, priorities and conditions contained in the European Partnership with Bosnia and Herzegovina and repealing Decision 2004/515/EC, OJ L 35, 7.2.2006, p. 19–31.

<sup>2</sup> Elektroprivreda data on the company's website: <http://www.elektroprivreda.ba/np/ep/epp?bp=7>, last accessed 28<sup>th</sup> January 2008.

Termoelektrana Tuzla (TEP) is a coal-fired energy plant producing 58% of total thermal electricity produced in the Federation of BiH. However, TEP is struggling to produce energy at a competitive price while simultaneously reducing its environmental impacts. The disposal of coal combustion residues has generated discontent among local residents and environmental organisations (e.g. Brkić and Barčić undated). Since its conception in 1964 TEP has disposed of nearly 40 million m<sup>3</sup> of combustion residues in nearby valleys occupying a surface of 176 hectares. These sites - locally referred to as 'black deserts'- have had negative impacts on the quality of surrounding land and water bodies. Moreover, air pollution occurs when fine ash particles that deposit on the surface of the sites become airborne; dust clouds can travel several kilometres and spread the ash to other areas. About 4000 people living close to the disposal sites are potentially exposed to the pollution. To stop dust dispersal, in the early 1990s TEP covered two inactive sites, Drežnik and Plane (total 63 ha), with a soil layer of 10-30 cm thickness. These sites are currently used by local people and have been cultivated since the Bosnian war (1992-1995).

RECOAL (Reintegration of coal ash disposal sites and mitigation of pollution in the West Balkan area) was a 3-year project under EU Sixth Framework Programme that finished at the end of 2007. Its mandate was to develop sustainable and low-cost solutions to remediate the coal ash disposal (CAD) sites. RECOAL used the CAD sites in Tuzla as a case study, developing a risk assessment of the area and evaluating several management possibilities such as compost additions to the ash, cultivation of indigenous crop varieties, tree belts, water filters and stabilisation wetlands.

The implementation of solutions developed during the project is outside the remit (and resources) of RECOAL. A concern of the project was, however, to facilitate the adoption of appropriate remediation solutions by tailoring their design to the socio-political context of coal ash management in Tuzla. Hence, efforts were directed at understanding the environmental governance structure in Tuzla and exploring the perceptions of local residents most likely to be affected by the implementation of the remediation solutions. This article recapitulates the results of the research reviewing the challenges related to coal ash management in Tuzla, and the potential policy obstacles for the remediation of the CAD sites. The research illustrates the difficulties of the environmental governance institutions to bring about effective remediation actions and suggests that locally organised action could help steer the policy-making process towards more sustainable solutions.

## Methodology

The research targeted two different aspects of coal ash management in Tuzla. First, to unveil the institutional structure, unstructured interviews were carried out among representatives of local and regional government and other local institutions, NGOs, industry, the health profession and academics involved or interested in coal ash remediation. The sample population was built using existing contacts of Bosnian project partners and contractors. In March and June 2005, 17 exploratory interviews about environmental governance in Tuzla were carried out, followed by 12 additional interviews in March 2006 investigating the potential use of the CAD sites. Finally, in December 2006, four tailored follow-up interviews with selected informants took place to update the original findings.

Second, semi-structured interviews were carried out among local residents in spring 2006 to record local perspectives on the CAD sites. The sample was selected by approaching households in the surroundings of the five disposal sites. The sample included 51 interviewees, with ages ranging from early 20s to 90s, representing different social groups such as manual workers, farmers, miners, housewives, students, the unemployed, retirees, local representatives and environmental activists.

The two data sets were analysed separately, following three main themes: (i) local demands on the disposal sites; (ii) the influence of different actors on the decision-making process; and (iii) the actual impact of different actors on the development of CAD remediation solutions.

In addition, the analysis explored the responses of local residents to the institutional actions around the CAD sites.

## The environmental governance context of coal ash disposal and remediation in Tuzla

The significance of coal ash pollution for the people of Tuzla is related to the proximity of the CAD sites to their place of residence and their specific management practices. Accordingly, different sets of expectations have emerged related to the particular characteristics of each CAD site. Outside the urban area, residents are organised in local communities (Mjesna Zajednica, MZ), with elected representatives entrusted to communicate and address a wide range of community concerns. For instance, the local representative of MS Solana (whose members have cultivated one of the CAD sites since the establishment of a soil cover in 1993) presented no reservations about the development of agriculture on the CAD sites. Representatives of MS Bukinje and MS Sički Brod (experiencing high dust levels from adjacent uncovered CAD sites), on the other hand, expressed serious concerns about the safety of the sites and the health risks imposed on local residents.

However, further research shows that the views of residents of different communities are more homogeneous than the views of their representatives. In most interviews, safety concerns about the use of the site were top of the list, even among those who cultivate the sites. Residents held TEP responsible for the sanitation and restoration of abandoned CAD sites. In the early 1990s, TEP covered Drežnik and Plane with soil. Later, TEP experimented with the addition of mineral wastes from nearby mines and reforestation with willows on the CAD site Divkovići. However, according to local residents remediation actions are still slow and/or largely ineffective.

Local residents and institutional representatives offered numerous proposals about what should or could be done with the disposal sites after their regeneration (e.g. building an industrial zone, a sports centre or a small airport). The Municipality, pressed by the lack of available land, has proposed building a cemetery, causing offence to those who consider burying their loved ones in a 'dumping site' a sacrilegious deed. Others are more open and accommodating to the range of potential land uses as long as the use entails some communal benefit.

The cultivation of the sites has created a conflict between those who farm the land and those who consider the risks of farming unacceptable. Farming is commonly justified on grounds of necessity (subsistence farming). Others pursue economic interests and press for more intensive farming practices on the CAD sites. For instance, the recently created Farmers' Union lobbies for transparent and transferable property rights, so that CAD-site farmers can acquire security for their production systems. Interestingly, proposals for the reforestation of the sites have received little attention from institutional representatives (and the RECOAL team) that have prioritised agricultural and industrial uses on the CAD sites, despite the wide support that reforestation enjoys among local residents.

Who has the responsibility- and the power- to take action to regenerate the CAD sites? In the former Yugoslavia, municipalities and individual enterprises (such as Elektroprivreda) were responsible for the day-to-day environmental regulation and management under the guidance of relevant ministries, together with a system of quasi-independent institutes, such as the Urban Planning Institute, providing advice (Clarke 2000). Thus, Tuzla municipality and TEP have been given a central role in deciding the development of the CAD sites. In addition, a modern urban planning institute was integrated into the new regional administrative division, the Canton.

The result is a complex institutional structure, with loosely divided competences and a considerable administrative burden. The future of the CAD sites is briefly stated in a strategic document, the Cantonal Spatial Plan for the period 2005-2025 which was compiled by the

Urban Planning Institute for the Canton. The Plan, published in 2006, specifies that the CAD sites have to be '*comprehensively remediated*' to facilitate the conversion of the land into '*small production units*' (but without specifying their final use)<sup>3</sup>. The next step is for the municipality to develop 'implementation documents' (Regulation Plans). Overall, the outcome of this process is a framework for decisions, without specifying measures for actual decision-making and implementation.

Moreover, the distribution of competencies between different levels of government and between local government institutions and industry is unclear or being challenged. Perhaps the most significant example is that of the ongoing negotiations between TEP and the Municipality about the property rights over the CAD sites, the value of the land and the extent of associated responsibilities and liabilities. Municipality officials assert that as long as TEP acts as the legal owner, they need to fulfil basic land regeneration duties and be consulted regarding any future plans for the development of the CAD sites. While in the longer term both TEP and the Municipality expect the sites to fall under the town's responsibility, municipal officials are concerned about the long-term pollution problems and associated liabilities that the sites may pose.

These negotiations are further complicated by TEP's administrative structure. Municipality officials perceive that the decision-making powers in TEP are displaced to the national headquarter of Elektroprivreda (in Sarajevo) and hence their local counterparts at TEP have no real power to negotiate with them. Moreover, Elektroprivreda in Sarajevo is pre-occupied dealing with the liberalisation of the energy sector and adapting to more stringent environmental and renewable technologies, as demanded by the EU. Thus, matters at the local level in Tuzla seem to be delayed by the administrative burden of a centralised institution (TEP) of perceived national importance.

The Municipality also appears powerless to act; officials report that they lack the resources to remediate the sites or to enforce the implementation of environmental regulations. For example a set of environmental legislation<sup>4</sup> was developed under the PHARE EU programme<sup>5</sup>, and later transposed into cantonal legislation. Local citizens particularly welcomed the creation of an 'Environmental Fund'<sup>6</sup>. This regulation follows the 'polluter pays principle' establishing a tax on those practices considered as polluting and using these revenues to ameliorate impacts. A municipal employee explained that the implementation of the Fund failed because of pressures from the industry on local institutions. Likewise, the Municipality is unable to enforce the polluter pays principle to coerce TEP either to remediate the sites or to pay for the pollution they have caused. A senior municipal official estimates the annual debt of TEP for air pollution alone to be around KM 2 million (about € 1 million); instead, TEP appears to be negotiating the cancellation of this debt in exchange for the property rights over the CAD sites.

On the other hand, the Canton and the Municipality are gaining power as a result of diverse alliances with local actors. The Farmers' Union for instance claims that it has the support of the Municipality to start cultivating the sites. On the other hand, the Canton used a local NGO, the Centre for Urban Ideas (Centar Urbanih Ideja) to develop the consultations for the

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<sup>3</sup> The Cantonal Spatial Plan was published in the Cantonal Official Gazette [Official Gazette, Vol 13 (9); Tuzla, 23 September 2006; pp.765-1035 - Sluzbene Novine, Godina 13, Broj 9; Tuzla, 23 Septembar 2006; str. 765-1035].

<sup>4</sup> Environmental protection (Official Gazette of F B&H, No. 33/03); Air protection (Official Gazette of F B&H, No. 33/03); Water protection (Official Gazette of F B&H, No. 33/03); Waste management (Official Gazette of F B&H, No. 33/03); Protection of nature (Official Gazette of F B&H, No. 33/03); and Establishment of an 'Environmental Fund' (Official Gazette of F B&H, No. 33/03).

<sup>5</sup> PHARE is an EU Programme that provides funds to accession countries to prepare them for membership of the EU. Also, integration measures and the development of harmonising regulations are supported by the CARDS Project (EC Support to the BiH Government in the European Integration Process).

<sup>6</sup> Establishment of an 'Environmental Fund' (Official Gazette of F B&H, No. 33/03)

Local Action Environmental Plan (LEAP) under the guidance and with the financial support of the World Bank (see CUI 2005).

These alliances have been particularly successful in bringing sustainability concerns into TEP's development plans. For instance, during 2006 TEP needed to find a location for a new CAD site. A previous proposal was successfully obstructed in 1998 by highly organised local resistance, involving groups such as the women's organisation and MZ Sički Brod's environmental group Eco-green (Eko-zeleni). Running out of space for disposal (and planning to double electricity production) TEP presented a plan to enlarge an existing CAD site affecting the local community Bukinje. The Municipality's permit system required a public consultation as part of the Environmental Impact Assessment<sup>7</sup>. In the end TEP obtained public consent (and the permit) for the enlargement, but had to agree to better measures for preventing environmental pollution and hence reducing the exposure of local communities.

## Local responses to coal ash pollution

Despite some improvements in energy/coal ash management as outlined in the previous section, local residents perceive that too little is done to protect them from the risks posed by TEP and the CAD sites, and many feel isolated from decision-making centres. Although local residents perceive that they can access the local institutions, they regard these as ineffective or powerless, thus not worth their engagement. Discontent is a common phenomenon in former transition countries where the transition process has brought social insecurity increasing the negative attitudes towards the new elected governments and institutions (Jancar-Webster 1998). However, in BiH, this is coupled with scepticism towards a system that divides government levels and institutions on ethnic grounds. Several interviewees stated that this system blocks the resolution of vital issues, such as environmental pollution, that have little to do with ethnic divisions. Nationalist parties are seen as using environmental issues to advance their own nationalistic interests rather than tackling the actual problems. Furthermore, local residents in Tuzla perceive that their environmental concerns receive little attention by the national and federal governments because the nationalist parties fail to echo citizens' actual concerns. Thus, they feel that they unjustly bear the environmental and health burdens while the rest of the country benefits from the energy production (Castán Broto *et al* 2007).

The interviews also indicate a lack of trust in governance institutions. For example, local citizens contest measurements of environmental pollution at a monitoring station installed by the Canton. Local frustration became evident after the readings led the cantonal authorities to suggest that air pollution was worse in the urban centre of Tuzla than in the communities around TEP and the disposal sites. Local residents found several pitfalls in the measurements, including the choice of location for the measuring station (protected from CAD sites/TEP's pollution by a small forest) and the choice of pollutants being monitored (those more common in vehicles than in coal combustion emissions). Various local residents and NGO representatives believe that the responsible authorities feel the need to protect TEP at all cost, and hence, because TEP pollutes beyond acceptable levels, they need to lie about pollution levels.

Interestingly, some local residents have found activism to be a way to cope with the pollution risks. Activism (in the form of environmental groups, a women's group and several production cooperatives) has brought together most people in the community of Sički Brod, who are posing a challenge to TEP by using public meetings and media to denounce what they believe is an industrial threat to their lives. Some mirror their discourses in those by

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<sup>7</sup> Article 40 of the Law on Environment Protection of Canton Tuzla (Official Gazette, No. 6/98; 15/00) sets the basis for the establishment of a procedure for Environmental Impact Assessment, as defined on a by-law (04.02.1999) '*on assessment of action impact on the environment*'. This by-law is of direct application in any activities undertaken by TEP. The regulation requires a public debate on the assessment.

international environmental NGOs (Castán Broto and Carter 2008). Most interviewees, however, indicated that they were well aware of environmental problems long before the war. Past successful lobbying includes their organised resistance during the 1980s that led TEP to cover some of the sites with soil and desisting from building a new site in a locally esteemed location, the lake 'Kop'.

In former Yugoslavia, some interviewees felt, things were '*done differently*'. Actions to prevent environmental degradation were taken *ad hoc*, rather than within a framework (or Spatial Plan), but this meant that local institutions could respond more quickly to local demands. Moreover, although the power of decision-making was not directly located within local communities, the governance structure was capable of incorporating and responding to local concerns about the environment. Nowadays, some residents feel that they are continuously being '*bothered*' and '*asked for opinion*' with few results emerging from their involvement.

The research also found very active and engaged residents willing to be involved along with the industry in activities to improve environmental conditions. For instance, a representative of the women's group explained that if TEP was willing to develop a district heating infrastructure, her local community would find the necessary labour to build the pipes and bring energy to every home. However, these efforts are ignored by an overly bureaucratic infrastructure that is further limited by the restricted agendas of the multi-party system. There are signs that government institutions and civil society are joining forces to work towards a more sustainable future, and industries like TEP will have to incorporate local concerns in their development programmes.

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